REMARKS

Claims 1, 21, and 64 have been amended. Claims 1-81 remain pending. Applicant reserves the right to pursue the original claims and other claims in this and other applications. The Title of the Invention has been amended to correspond more closely to the pending claims. Applicant respectfully requests reconsideration of the above-referenced application in light of the amendments and following remarks.

FIGS. 1-20 are objected to over 37 C.F.R. § 1.121(d) and replacement sheets of drawings are requested. In response, a Submission of Replacement Sheets of Drawings (FIGS. 1-20) is being filed concurrently herewith. The Office Action also requests that FIG. 1 should be designated as "Prior Art." FIG. 1 has been labeled as "Prior Art" in accordance with the Examiner's request.

The drawings are also objected to as failing to comply with 37 C.F.R. § 1.84(p)(5) because element 10 is not labeled in the specification. The specification has been amended to refer to element 10 which is a trench isolation region otherwise known in the art. For example, element 10 appearing in FIG. 1 which has been labeled as prior art.

Claims 1-2, 5, 8, 20, 64-66, and 69 stand rejected under 35 U.S.C. § 102(b) as being anticipated by JP 62278432 A ("Hoshi"). The rejection is respectfully traversed.

Hoshi does not disclose an *image sensor pixel* comprising, *inter alia*," a mesh filter formed over [a] photoconversion device *for passing light* of a specific wavelength," as recited in claim 1 (emphasis added), or a method of forming an *image sensor pixel cell* comprising, *inter alia*, "forming a mesh filter over [a] photoconversion device *for passing light* of a specific wavelength," as recited in claim 64 (emphasis added).

Hoshi, by contrast, merely discloses a structure consisting of a copper mesh filter 2 for use with *radio* waves. Two filters in Hoshi, *i.e.*, filters 2 and 3, are used to cut off *noise* signals. Hoshi's incidence window 1 is the only filter that is used for cutting off short wavelength light. The other two filters, i.e., filters 2 and 3, are used for "cutting off light transmitting *radio waves*." (Abstract) (emphasis added). Hoshi's device is used for radio waves since element 4 is described as an "*antenna*." (Abstract) (emphasis added).

Thus, according to the machine translation that was attached to the Office Action, Hoshi discloses, in FIG. 1, "[l]ight to be measured of a *plasma* entering at an incidence window 1 which serves as filter for cut off short wavelength range while vacuum sealing up the inside of a detector section is transmitted through filters 2 and 3 arranged sequentially." (Abstract) (emphasis added). Filter 2 consists "of a copper mesh deposited on a *sapphire plate* . . . in the measurement of *plasma* and a reflectance enough to cut off *noise signals*." (Abstract) (emphasis added). The "light receiving element 4 is used as an *antenna*." (Abstract) (emphasis added). In other words, filters 2 and 3 cut off light transmitting *radio waves* and only filter 1 cuts off short wavelength light. As a result, Hoshi does not disclose an image sensor pixel or a method of making the same comprising a mesh filter formed over a photoconversion device *for passing light* of a specific wavelength.

Claims 2, 5, 8, and 20 depend from claim 1 and should be allowable with claim 1 for at least the reasons provided above regarding claim 1, and on their own merits. Claims 65-66 and 69 depend from claim 64 and should be allowable with claim 64 for at least the reasons provided above regarding claim 64, and on their own merits.

For example, Hoshi does not disclose an image sensor pixel comprising, *inter alia*, that a "mesh filter comprises *apertures* that are sized to pass light of a specific wavelength to [a] photoconversion device," as recited in claims 2 and 65 (emphasis added), or that the "mesh filter is formed from a metal layer deposited and patterned to interconnect *image sensor* circuitry," as recited in claim 5 (emphasis added). These are additional reasons for the allowance of dependent claims 2, 5, and 65.

Claims 3-4, 6-7, 9-19, 21-63, 67-68, and 70-81 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoshi. The rejection is respectfully traversed.

Claims 3-4, 6-7, and 9-19 depend from claim 1 and should be allowable with claim 1 for at least the reasons provided above regarding claim 1, and on their own merits. Claims 67-68 and 70-77 depend from claim 64 and should be allowable with claim 64 for at least the reasons provided above regarding claim 64, and on their own merits.

For instance, Hoshi does not teach or suggest an image sensor pixel that "is a CMOS image sensor," as recited in claim 3, or a "a CCD image sensor," as recited in claim 4. Hoshi does not disclose or suggest an image sensor pixel with a metal layer that "has a thickness of about 70 nm to about 150 nm," as recited in claims 6 and 67, or "has a thickness of about 100 nm," as recited in claims 7 and 68. Hoshi does not disclose or suggest an image sensor pixel with apertures that are "circular," as recited in claims 9 and 70, "rectangular," as recited in claims 10 and 71, "triangular" as recited in claim 11 and 72, or apertures that have a size "of about 400 nm to about 700 nm," as recited in claims 13 and 74, "a size of about 475 nm," as recited in claims 14 and 75, "a size of about 525 nm," as recited in claims 15 and 76, or "a size of about 650 nm," as recited in claims 16 and 77.

As described above, Hoshi discloses a structure for use with *radio waves*. Hoshi's copper mesh filter 2 is used to cut off noise signals from the measurement of plasma. Light enters incidence window 1 which is the only *light-filtering* element in Hoshi's structure. Hoshi does not disclose or suggest an image sensor pixel, much less one with different sized apertures and shapes.

Moreover, "[i]n order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992); M.P.E.P. § 2141.01(a). A structure that is used for radio waves or as an antenna is *not* reasonably pertinent to problems associated with CMOS or CCD imaging devices, as recited in claims 3, 4, 35, 36, 54, and 55. Applicant's field, CMOS and CCD imaging devices, and Hoshi's field, a structure filtering radio waves with an antenna, involves entirely distinct problems and solutions. Therefore, nothing commends looking at Hoshi's field, to an inventor attempting to improve CMOS or CCD imaging devices. *See* M.P.E.P. § 2141.01(a).

Still further, Applicant respectfully submits that the Office Action has failed to set forth a *prima facie* case of obviousness with regard to claims 3-4, 6-7, 9-19, 21-63, 67-68, and 70-81. *See* M.P.E.P. § 2143. "To establish *prima facie* obviousness of a claimed invention, *all* the claim limitations must be taught or suggested by the prior art." M.P.E.P. § 2143.03 (emphasis added). As the Office Action acknowledges, there are many elements that Hoshi does *not* disclose or suggest. The Office Action merely and summarily concludes that the elements recited in claims 3-4, 6-7, 9-19, 21-63, 67-68, and 70-81 would have been obvious.

However, "[a] statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art' at the time the claimed invention was made because the references relied upon teach that all aspects of the claimed invention were individually known in the art is *not sufficient* to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." M.P.E.P. § 2143.02. As a result, Applicant respectfully submits that the Office Action has failed to set forth a *prima facie* case of obviousness.

The Office Action acknowledges that Hoshi, with respect to claims 3 and 4, does not disclose or suggest a photodetector used in a CMOS or CCD image sensor; but, concludes that it would have been obvious to incorporate Hoshi's structure into one (Office Action, pg. 4). Applicant respectfully disagrees. As indicated above, Hoshi discloses a *single* light-filter 1, the remaining filters 2 and 3 are used to filter noise from the measurement of plasma when element 4 is used as an *antenna*. There is no motivation to use a structure employed as an antenna in a CMOS or CCD *image* sensor. Further, a *prima facie* case of obviousness has not been set forth. *See* M.P.E.P. § 2143.02.

The Office Action acknowledges that Hoshi, with respect to claims 7-8, does not disclose or suggest the thicknesses of the metal layers; but, concludes that it would have been a matter of obvious design choice to ensure that the copper filter 2 filters out appropriate wavelengths of light (Office Action, pg. 4). Applicant respectfully submits that copper filter 2 is used to filter out *noise signals* rather than light wavelength in the measurement of plasma (Abstract). Filter 1 is used to filter light wavelength and not filters 2 and 3. Further, a *prima facie* case of obviousness has not been set forth. *See* M.P.E.P. § 2143.02.

The Office Action acknowledges that Hoshi, with respect to claims 9-11 and 13-16, does not disclose or suggest the shape or size of the apertures; but, concludes that it would have been a matter of obvious design choice to allow certain amounts of light to be incident on the detector. As indicated above, element 4 is used as an *antenna* in Hoshi's structure (Abstract). Further, a *prima facie* case of obviousness has not been set forth. *See* M.P.E.P. § 2143.02.

The Office Action acknowledges that Hoshi, with respect to claims 12, 17, 18, and 19, does not disclose or suggest apertures that pass visible light, non-visible light, infrared light, or near-infrared light; but, merely concludes that it would have been obvious. A *prima facie* case of obviousness has not been set forth. *See* M.P.E.P. § 2143.02.

The Office Action acknowledges that Hoshi, with respect to claims 21 and 22, does not disclose or suggest an additional mesh filter formed over the first filter; but, merely concludes that it would have been obvious. A *prima facie* case of obviousness has not been set forth. *See* M.P.E.P. § 2143.02.

Hoshi does not disclose an *image sensor pixel* comprising, *inter alia*, "a photoconversion device . . . a first mesh filter positioned over said photoconversion device *for passing light* of a specific wavelength; and at least one additional mesh filter positioned over said first mesh filter *for passing light* of a specific wavelength," as recited in claim 21 (emphasis added). Hoshi, at best, discloses a copper mesh filter 2 formed underneath filter 3. There is *no* disclosure or suggestion that filter 3 is a *mesh filter*, much less one that *passes light* of a specific wavelength.

Similarly, Hoshi does not disclose an *image sensor* or *image sensor system* comprising, *inter alia*, "an array of *pixels* . . . and a plurality of mesh filters respectively formed over said pixels . . . [each] passing *light of one of three colors* to a respective photoconversion device," as recited in claims 26 and 45 (emphasis added), much less a method of forming an image sensor comprising, *inter alia*, "forming an array of pixels . . . and forming a plurality of metal mesh filters over said pixels, each metal mesh filter *passing light* of one of three colors to a respective photoconversion device," as recited in claim 78 (emphasis added).

Claims 22-25 depend from claim 21. Claims 27-44 depend from claim 26. Claims 46-63 depend from claim 45. Claims 79-81 depend from claim 78. These dependent claims should be allowable along with their independent claims for at least the reasons provided above, and on their own merits. Specifically, the Office Action fails to set forth a *prima facie* case of obviousness. All of the claim limitations are *not* taught or disclosed in Hoshi. *See* M.P.E.P. § 2143.02.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to review and pass this application to issue.

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Respectfully submitted,

By _____

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